



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

January 28, 2009

Mr. Edward D. Halpin
Chief Nuclear Officer
STP Nuclear Operating Company
South Texas Project
P.O. Box 289
Wadsworth, TX 77483

SUBJECT: SOUTH TEXAS PROJECT, UNITS 1 AND 2 - FINAL ISSUANCE OF
AMENDMENTS RE: EXTENDED RANGE NEUTRON FLUX
INSTRUMENTATION AND TECHNICAL SPECIFICATION 3.4.1.4.2
(TAC NOS. MD8003 AND MD8004)

Dear Mr. Halpin:

The Commission has issued the enclosed Amendment No. 189 to Facility Operating License No. NPF-76 and Amendment No. 177 to Facility Operating License No. NPF-80 for the South Texas Project (STP), Units 1 and 2, respectively. The amendments consist of changes to the Technical Specifications (TSs) in response to your application dated January 28, 2008 (NOC-AE-07002234), as supplemented by letters dated July 28, September 25 and 30, and November 24, 2008 (NOC-AE-08002319, NOC-AE-08002351, NOC-AE-08002354, and NOC-AE-08002363, respectively).

In its letter dated October 16, 2008, the Nuclear Regulatory Commission (NRC) approved Amendment Nos. 187 (Unit 1) and 174 (Unit 2) that revised (1) Action 5 in TS 3.3.1, "Reactor Trip Instrumentation," for one inoperable channel of extended range neutron flux instrumentation, in TS Table 3.3-1, "Reactor Trip System Instrumentation," and (2) Action c in TS 3.4.1.4.2, "Reactor Coolant System, Cold Shutdown - Loops Not Filled." This letter did not address all of the TS changes requested in the application dated January 28, 2008.

In the supplemental letter dated September 30, 2008, STP Nuclear Operating Corporation requested that NRC defer its review of the proposed Action 5.b for the condition of two less than minimum channels operable for this instrumentation and approve the requested changes in the application identified as items (1) and (2) in the previous paragraph. The NRC staff did that in its letter dated October 16, 2008, and this letter now addresses the remaining proposed TS change to Action 5.

The enclosed Amendment Nos. 189 (Unit 1) and 177 (Unit 2) revise Action 5 in TS Table 3.3-1 to add remedial actions for the condition of the number of operable channels being two less than the minimum channels operable for the extended range neutron flux instrumentation. With these amendments, the NRC staff has completed its review of the TS changes proposed in your application dated January 28, 2008.

E. Halpin

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A copy of our related Safety Evaluation is also enclosed. The Notice of Issuance will be included in the Commission's next biweekly *Federal Register* notice.

Sincerely,

A handwritten signature in black ink that reads "Jack N. Donohew". The signature is written in a cursive style with a large initial "J" and a long horizontal stroke at the end.

Jack N. Donohew, Senior Project Manager
Plant Licensing Branch IV
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-498 and 50-499

Enclosures:

1. Amendment No. 189 to NPF-76
2. Amendment No. 177 to NPF-80
3. Safety Evaluation

cc w/encls: See next page



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

STP NUCLEAR OPERATING COMPANY

DOCKET NO. 50-498

SOUTH TEXAS PROJECT, UNIT 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 189
License No. NPF-76

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by STP Nuclear Operating Company (STPNOC)* acting on behalf of itself and for NRG South Texas LP, the City Public Service Board of San Antonio (CPS), and the City of Austin, Texas (COA) (the licensees), dated January 28, 2008, as supplemented by letters dated July 28, September 25 and 30, and November 24, 2008, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;
 - B. The facility will operate in conformity with the application, as amended, the provisions of the Act, and the rules and regulations of the Commission;
 - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
 - D. The issuance of this license amendment will not be inimical to the common defense and security or to the health and safety of the public; and
 - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

*STPNOC is authorized to act for NRG South Texas LP, the City Public Service Board of San Antonio, and the City of Austin, Texas, and has exclusive responsibility and control over the physical construction, operation, and maintenance of the facility.

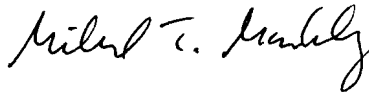
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and Paragraph 2.C.(2) of Facility Operating License No. NPF-76 is hereby amended to read as follows:

- (2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 189, and the Environmental Protection Plan contained in Appendix B, are hereby incorporated in the license. STPNOC shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

3. The license amendment is effective as of its date of issuance and shall be implemented within 90 days from the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



Michael T. Markley, Chief
Plant Licensing Branch IV
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Facility Operating
License No. NPF-76 and the
Technical Specifications

Date of Issuance: January 28, 2009



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

STP NUCLEAR OPERATING COMPANY

DOCKET NO. 50-499

SOUTH TEXAS PROJECT, UNIT 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 177
License No. NPF-80

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by STP Nuclear Operating Company (STPNOC)* acting on behalf of itself and for NRG South Texas LP, the City Public Service Board of San Antonio (CPS), and the City of Austin, Texas (COA) (the licensees), dated January 28, 2008, as supplemented by letters dated July 28, September 25 and 30, and November 24, 2008, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;
 - B. The facility will operate in conformity with the application, as amended, the provisions of the Act, and the rules and regulations of the Commission;
 - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
 - D. The issuance of this license amendment will not be inimical to the common defense and security or to the health and safety of the public; and
 - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

*STPNOC is authorized to act for NRG South Texas LP, the City Public Service Board of San Antonio, and the City of Austin, Texas, and has exclusive responsibility and control over the physical construction, operation, and maintenance of the facility.

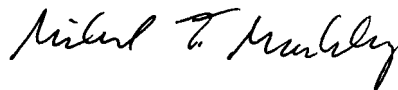
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and Paragraph 2.C.(2) of Facility Operating License No. NPF-80 is hereby amended to read as follows:

- (2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 177, and the Environmental Protection Plan contained in Appendix B, are hereby incorporated in the license. STPNOC shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

3. The license amendment is effective as of its date of issuance and shall be implemented within 90 days from the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



Michael T. Markley, Chief
Plant Licensing Branch IV
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Facility Operating
License No. NPF-80 and the
Technical Specifications

Date of Issuance: January 28, 2009

ATTACHMENT TO LICENSE AMENDMENT NOS. 189 AND 177

FACILITY OPERATING LICENSE NOS. NPF-76 AND NPF-80

DOCKET NOS. 50-498 AND 50-499

Replace the following pages of the Facility Operating Licenses, Nos. NPF-76 and NPF-80, and Appendix A Technical Specifications with the attached revised pages. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

Unit 1 Facility Operating License

<u>REMOVE</u>	<u>INSERT</u>
4	4

Unit 2 Facility Operating License

<u>REMOVE</u>	<u>INSERT</u>
4	4

Technical Specifications

<u>REMOVE</u>	<u>INSERT</u>
3/4 3-7	3/4 3-7
3/4 3-8	3/4 3-8

(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 189, and the Environmental Protection Plan contained in Appendix B, are hereby incorporated in the license. STPNOC shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

(3) Not Used

(4) Initial Startup Test Program (Section 14, SER)*

Any changes to the Initial Test Program described in Section 14 of the Final Safety Analysis Report made in accordance with the provisions of 10 CFR 50.59 shall be reported in accordance with 50.59(b) within one month of such change.

(5) Safety Parameter Display System (Section 18, SSER No. 4)*

Before startup after the first refueling outage, HL&P^[**] shall perform the necessary activities, provide acceptable responses, and implement all proposed corrective actions related to issues as described in Section 18.2 of SER Supplement 4.

(6) Supplementary Containment Purge Isolation (Section 11.5, SSER No. 4)

HL&P shall provide, prior to startup from the first refueling outage, control room indication of the normal and supplemental containment purge sample line isolation valve position.

* The parenthetical notation following the title of many license conditions denotes the section of the Safety Evaluation Report and/or its supplements wherein the license condition is discussed.

** The original licensee authorized to possess, use and operate the facility was HL&P. Consequently, historical references to certain obligations of HL&P remain in the license conditions.

(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 177 and the Environmental Protection Plan contained in Appendix B, are hereby incorporated in the license. STPNOC shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

(3) Not Used

(4) Initial Startup Test Program (Section 14, SR)*

Any changes to the Initial Test Program described in Section 14 of the Final Safety Analysis Report made in accordance with the provisions of 10 CFR 50.59 shall be reported in accordance with 50.59(b) within one month of such change.

(5) License Transfer

Texas Genco, LP shall provide decommissioning funding assurance, to be held in decommissioning trusts for South Texas Project, Unit 2 (Unit 2) upon the direct transfer of the Unit 2 license to Texas Genco, LP, in an amount equal to or greater than the balance in the Unit 2 decommissioning trust immediately prior to the transfer. In addition, Texas Genco, LP shall ensure that all contractual arrangements referred to in the application for approval of the transfer of the Unit 2 license to Texas Genco, LP to obtain necessary decommissioning funds for Unit 2 through a non-bypassable charge are executed and will be maintained until the decommissioning trusts are fully funded, or shall ensure that other mechanisms that provide equivalent assurance of decommissioning funding in accordance with the Commission's regulations are maintained.

(6) License Transfer

The master decommissioning trust agreement for Unit 2, at the time the direct transfer of Unit 2 to Texas Genco, LP is effected and thereafter, is subject to the following:

* The parenthetical notation following the title of many license conditions denotes the section of the Safety Evaluation Report and/or its supplements wherein the license condition is discussed.

TABLE 3.3-1 (Continued)
ACTION STATEMENTS (Continued)

- ACTION 3 - With the number of channels OPERABLE one less than the Minimum Channels OPERABLE requirement and with the THERMAL POWER level:
- a. Below the P-6 (Intermediate Range Neutron Flux Interlock) Setpoint, restore the inoperable channel to OPERABLE status prior to increasing THERMAL POWER above the P-6 Setpoint, and
 - b. Above the P-6 (Intermediate Range Neutron Flux Interlock) Setpoint but below 10% of RATED THERMAL POWER, restore the inoperable channel to OPERABLE status prior to increasing THERMAL POWER above 10% of RATED THERMAL POWER.
- ACTION 4 - With the number of OPERABLE channels one less than the Minimum Channels OPERABLE requirement, suspend all operations involving positive reactivity changes. Limited plant cooldown or boron dilution is allowed provided the change is accounted for in the calculated SHUTDOWN MARGIN.
- ACTION 5 -
- a. With the number of OPERABLE channels one less than the Minimum Channels OPERABLE requirement, restore the inoperable channel to OPERABLE status within 72 hours, or immediately suspend all operations involving positive reactivity changes.

Note: Plant temperature changes or boron dilution is allowed provided the change is accounted for in the calculated SHUTDOWN MARGIN.
 - b. With the number of OPERABLE channels two less than the Minimum Channels OPERABLE requirement,

Immediately suspend all operations involving positive reactivity changes,

AND

Within 15 minutes isolate unborated water flow paths from the reactor makeup water system to the reactor coolant system,

AND

Perform either of the following:

Restore at least one channel to OPERABLE status within 1 hour,

OR
 1. Within 2 hours secure each unborated water flow path to the reactor coolant system by use of at least one closed and de-activated automatic valve, closed manual valve, blind flange, or check valve with flow through the valve secured,

AND
 2. Within 4 hours and once per 12 hours thereafter, verify SHUTDOWN MARGIN is within limits.

Note: Operations involving plant temperature changes may proceed provided the change is accounted for in the calculated SHUTDOWN MARGIN.

TABLE 3.3-1 (Continued)
ACTION STATEMENTS (Continued)

- ACTION 6 - With the number of OPERABLE channels one less than the Total Number of Channels, STARTUP and/or POWER OPERATION may proceed provided the following conditions are satisfied:
- a. For Functional Units with installed bypass test capability, the inoperable channel may be placed in bypass, and must be placed in the tripped condition within 72 hours.

Note: A channel may be bypassed for up to 12 hours for surveillance testing per Specification 4.3.1.1, provided no more than one channel is in bypass at any time.
 - b. For Functional Units with no installed bypass test capability,
 - 1. The inoperable channel is placed in the tripped condition within 72 hours, and
 - 2. The Minimum Channels OPERABLE requirement is met; however, the inoperable channel may be bypassed for up to 12 hours for surveillance testing of other channels per Specification 4.3.1.1.
- ACTION 7 - (Not Used)
- ACTION 8 - With less than the Minimum Number of Channels OPERABLE, within 1 hour determine by observation of the associated permissive annunciator window(s) that the interlock is in its required state for the existing plant condition, or apply Specification 3.0.3.
- ACTION 9 - With the number of OPERABLE channels one less than the Minimum Channels OPERABLE requirement, be in at least HOT STANDBY within 6 hours; however, one channel may be bypassed for up to 2 hours for surveillance testing per Specification 4.3.1.1, provided the other channel is OPERABLE.
- ACTION 9A -
- a. With the number of OPERABLE channels one less than the Minimum Channels OPERABLE requirement, within 24 hours restore the inoperable channel to OPERABLE status, or apply the requirements of the CRMP, or be in at least HOT STANDBY within the next 6 hours; however, one channel may be bypassed for up to 4 hours for surveillance testing per Specification 4.3.1.1, provided the other channel is OPERABLE.
 - b. With the number of OPERABLE channels more than one less than the Minimum Channels OPERABLE requirement, within 1 hour restore at least one inoperable channel to OPERABLE status or apply the requirements of the CRMP, or be in at least HOT STANDBY within the next 6 hours.
- ACTION 10 - With the number of OPERABLE channels one less than the Minimum Channels OPERABLE requirement, restore the inoperable channel to OPERABLE status within 48 hours or open the Reactor Trip System breakers within the next hour.
- ACTION 11 - (Not Used)
- ACTION 12 - With one of the diverse trip features (undervoltage or shunt trip attachment) inoperable, restore it to OPERABLE status within 48 hours or declare the breaker inoperable and apply ACTION 9. The breaker shall not be bypassed while one of the diverse trip features is inoperable except for the time required for performing maintenance to restore the breaker to OPERABLE status.



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NOS. 189 AND 177 TO

FACILITY OPERATING LICENSE NOS. NPF-76 AND NPF-80

STP NUCLEAR OPERATING COMPANY, ET AL.

SOUTH TEXAS PROJECT, UNITS 1 AND 2

DOCKET NOS. 50-498 AND 50-499

1.0 INTRODUCTION

By application dated January 28, 2008 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML080350037), as supplemented by letters dated July 28, September 25 and 30, and November 24, 2008 (ADAMS Accession Nos. ML082180230, ML082770068, ML082800178, and ML083370306, respectively), STP Nuclear Operating Company (the licensee), requested changes to the Technical Specifications (TSs) for South Texas Project (STP), Units 1 and 2.

In its application, the licensee proposed the following changes to the TSs: (1) revise Action 5 in TS Table 3.3-1, "Reactor Trip System Instrumentation," of TS 3.3.1, "Reactor Trip Instrumentation," and (2) revise Action c in TS 3.4.1.4.2, "Reactor Coolant System, Cold Shutdown - Loops Not Filled." The proposed change to Action 5 in TS Table 3.3-1 is to separate the action into Actions 5.a and 5.b. The Action 5.a would be the current actions for one less than the minimum channels operable and the new Action 5.b would be for the number of operable channels two less than the minimum channels operable requirement.

By letter dated October 16, 2008 (ADAMS Accession No. ML082810286), the Nuclear Regulatory Commission (NRC) approved Amendment Nos. 187 (Unit 1) and 174 (Unit 2) that revised (1) Action 5 in TS 3.3.1 for one inoperable channel of extended range neutron flux instrumentation and (2) Action c in TS 3.4.1.4.2. Because the licensee had not provided sufficient justification for the new Action 5.b, this proposed TS change in the application dated January 28, 2008, was not addressed in Amendment Nos. 187 and 174. In its letter dated September 30, 2008, the licensee requested that the approval for the proposed Action 5.b be deferred until additional information was provided by the licensee to the NRC. This information was provided in the supplemental letter dated November 24, 2008, and the proposed changes to Action 5 are addressed in this safety evaluation.

The supplemental letters dated July 28, September 25 and 30, and November 24, 2008, provided additional information that clarified the application, did not expand the scope of the application as originally noticed, and did not change the staff's original proposed no significant hazards consideration determination as published in the *Federal Register* on March 25, 2008 (73 FR 15788).

In Attachment 2 to the enclosure to the application dated January 28, 2008, the licensee presented the inserts to be added to the TS Bases for the proposed revisions to Action 5 of TS Table 3.3-1. Changes to the TS Bases are controlled by TS 6.8.3.m, "Technical Specifications (TS) Bases Control Program." Revisions to the TS Bases for STP, Units 1 and 2 are made by the licensee in accordance with TS 6.8.3.m and are not approved by the NRC staff.

2.0 REGULATORY EVALUATION

In Section 50.36 of Title 10 of the *Code of Federal Regulations* (10 CFR 50.36), the Commission established its regulatory requirements related to the content of the TSs. Pursuant to 10 CFR 50.36, TSs are required to include items in the following five specific categories related to station operation: (1) safety limits, limiting safety system settings, and limiting control settings; (2) limiting conditions for operation (LCOs); (3) SRs; (4) design features; and (5) administrative controls.

As stated in 10 CFR 50.36(c)(2)(i), LCOs are "the lowest functional capability or performance levels of equipment required for safe operation of the facility. When a limiting condition for operation of a nuclear reactor is not met, the licensee shall shut down the reactor or follow any remedial action permitted by the technical specifications ..." The remedial actions in the TSs are specified in terms of LCO conditions, required actions, and completion times (CTs), or allowed outage times (AOTs), to complete the required actions. When an LCO is not being met, the CTs specified in the TSs are the time allowed in the TSs for completing the specified required actions. The conditions and required actions specified in the TSs must be acceptable remedial actions for the LCO not being met, and the CTs must be a reasonable time for completing the required actions while maintaining the safe operation of the plant.

As required by 10 CFR 50.36(c)(2)(ii), an LCO must be included in TS for any item meeting one of the following four criteria:

- Criterion 1: Installed instrumentation that is used to detect, and indicate in the control room, a significant abnormal degradation of the reactor coolant pressure boundary.
- Criterion 2: A process variable, design feature, or operating restriction that is an initial condition of a design basis accident or transient analysis that either assumes the failure of or presents a challenge to the integrity of a fission product barrier.
- Criterion 3: A structure, system, or component that is part of the primary success path and which functions or actuates to mitigate a design basis accident or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier.
- Criterion 4: A structure, system, or component which operating experience or probabilistic safety assessment has shown to be significant to public health and safety.

Those items that do not fall within or satisfy any of the above criteria are not required to be included in the TSs.

As required by 10 CFR 50.36(c)(3), SRs are the requirements related to test, calibration, or inspection to assure that the necessary quality of systems and components is maintained, that facility operation will be within safety limits, and that the LCOs will be met.

As required by 10 CFR 50.36(c)(5), administrative controls are the provisions relating to organization and management, procedures, recordkeeping, review and audit, and reporting necessary to assure operation of the facility in a safe manner.

Although the extended range neutron flux instrumentation in TS Table 3.3-1 are not being changed by the proposed amendment and only the remedial actions for inoperable extended range neutron flux instrumentation channels are being changed in the TSs, there are the following two General Design Criteria (GDC) for nuclear power plants in Appendix A to 10 CFR Part 50 that apply as requirements for the proposed amendment.

- GDC 10, "Reactor Design," states, "The reactor core and associated coolant, control, and protection systems shall be designed with appropriate margin to assure that specified acceptable fuel design limits are not exceeded during any condition of normal operation, including the effects of anticipated operational occurrences."
- GDC 15, "Reactor coolant system Design," states, "The reactor coolant system and associated auxiliary, control, and protection systems shall be designed with sufficient margin to assure that the design conditions of the reactor coolant pressure boundary are not exceeded during any condition of normal operation, including anticipated operational occurrences."

GDC 13, "Instrumentation and Control," requires that "instrumentation shall be provided to monitor variables and systems over their anticipated ranges for normal operation, anticipated operational occurrences, and for accident conditions as appropriate to assure adequate safety, including those variables and systems that can affect the fission process, the integrity of the reactor core, the reactor coolant pressure boundary, and the containment and its associated systems. Appropriate controls shall be provided to maintain these variables and systems within prescribed operating ranges." Since the design of the extended range neutron flux instrumentation is not being changed by this amendment, only the remedial actions for inoperable instrumentation is being changed, the plant continues to meet GDC 13.

Although the STP, Units 1 and 2, TSs are not based on the improved standard TSs (ISTSSs), these standard TSs provide guidance as to the requirements for the LCOs in plant TSs. The proposed amendment is for the extended range neutron flux function in TS Table 3.3-1 of LCO 3/4/3.1, "Reactor Trip System Instrumentation." In the ISTSSs for Westinghouse plants, because STP, Units 1 and 2, are Westinghouse plants, NUREG-1431, "Standard Technical Specifications, Westinghouse Plants," dated June 2004, the equivalent LCO for the extended range neutron flux instrumentation is LCO 3.3.9, "Boron Dilution Protection System (BDPS)," since the function for this instrumentation is to prevent the boron dilution of the reactor coolant system (RCS). Although the formats and the text of the STP TSs and the ISTSSs for the requirements on this instrumentation are different, the requirements for the LCOs, LCO conditions, required remedial actions, CTs, and SRs are equivalent.

3.0 TECHNICAL EVALUATION

3.1 Proposed Change to the Actions of TS Table 3.3-1

Of the proposed changes in the application dated January 28, 2008, the remaining proposed changes to the extended range neutron flux function in TS Table 3.3-1 that were not addressed in Amendment Nos. 187 (Unit 1) and 174 (Unit 2) are the following:

1. Action 5 would be separated into Actions 5.a (for the number of operable channels being one less than the minimum channels operable) and 5.b (for the number of operable channels being two less than the minimum channels operable).
2. Action 5.a would be the current Action 5 for the case when the number of operable channels being one less than the minimum channels operable. The current Action 5, which was approved in Amendment Nos. 187 and 174, reads as follows:

With the number of OPERABLE channels one less than the Minimum Channels OPERABLE requirement, restore the inoperable channel to OPERABLE status within 72 hours, or immediately suspend all operations involving positive reactivity changes.

Note: Plant temperature changes or boron dilution is allowed provided the change is accounted for in the calculated SHUTDOWN MARGIN.

3. Action 5.b would be the new required action for the case when the number of operable channels is two less than the minimum channels operable. The proposed required actions are the following:

With the number of OPERABLE channels two less than then the Minimum Channels OPERABLE requirement,

Immediately suspend all operations involving positive reactivity changes,

AND

Within 15 minutes isolate unborated water flow paths from the reactor makeup water system to the reactor coolant system,

AND

Perform either of the following:

Restore at least one channel to OPERABLE status within 1 hour,

OR

1. Within 2 hours secure each unborated water flow path to the reactor coolant system by use of at least one closed or de-activated automatic valve, closed manual valve, blind flange, or check valve with flow through the valve secured,

AND

2. Within 4 hours and once per 12 hours thereafter, verify SHUTDOWN MARGIN is within limits.

Note: Operations involving plant temperature changes may proceed provided the change is accounted for in the calculated SHUTDOWN MARGIN.

The words above that are written all in capitals are words that are defined in the TS 1.0, "Definitions," of the TSs.

The total number of channels, channels to trip, minimum channels operable, and applicable modes for the extended range neutron flux function in TS Table 3.3-1 are not being changed by this amendment. The applicable modes remain Modes 3, 4, and 5.

The above Action 5 in TS Table 3.3-1 is the required action specified if the extended range neutron flux instrumentation, function no. 7 in the table, does not meet the minimum channels operable requirement for that function in the table. Action 5 applies only to the extended range neutron flux instrumentation and only Action 5 is being changed, as described above, by this amendment.

The current Action 5 is only applicable for the number of operable channels one less than the minimum channels operable requirement of two. Although this instrumentation has two channels, there is no specified action if both channels are inoperable. The licensee has proposed to revise Action 5 to account for either one or two channels inoperable. The proposed Actions 5.a and 5.b would be for (a) one channel less than the minimum channels operable, and (b) two channels less than the minimum channels operable. Since there are only two channels, there would not be any other actions specified for more than two channels less than the minimum channels operable.

The NRC staff review of the proposed Action 5.b to TS Table 3.3-1 is based on the information in the application dated January 28, 2008, and the supplemental letters dated September 25 and November 24, 2008.

3.2 Background

The purpose of the extended range neutron flux monitoring instrumentation in TS Table 3.3-1 is to alert the operator to a loss of shutdown margin (SDM) from a boron dilution event. In Modes 3, 4, and 5, the extended range neutron flux multiplication alarm provides the signal indicating an inadvertent boron dilution. There are two channels of the monitoring instrumentation. Either channel can provide the required flux multiplication alarm. This alarm is credited in the boron dilution analysis presented in Section 15.4.6 of the updated final safety analysis report (UFSAR).

In its application, the licensee stated that the boron dilution analysis was performed to ensure that the operator action time from a flux multiplication signal to complete loss of SDM is greater than 15 minutes. The event was analyzed for all operating modes except those modes where administrative controls prohibit dilution in UFSAR Section 15.4.6 and the boron dilution event is not postulated in Mode 6 because there are administrative controls that are used to isolate sources of unborated water and preclude the event.

The existing Action 5 in TS Table 3.3-1 provides the required action for one inoperable channel, but does not provide an action requirement to address the condition of both channels of the extended range neutron flux instrumentation being inoperable. The licensee has proposed an Action 5.b to address the condition where both channels of the instrumentation are inoperable.

3.3 Proposed ACTION 5.b in TS Table 3.3-1

ACTION 5.b in TS Table 3.3-1 is a new TS requirement. ACTION 5.b states that when both channels of the extended range neutron flux instrumentation are inoperable, the operator is required to perform all of the following actions:

- (1) Immediately suspend all operations involving positive reactivity changes, and
- (2) Within 15 minutes, isolate unborated water flow paths from the reactor makeup water system to the reactor coolant system, and
- (3) Restore at least one channel to operable status within 1 hour.

If the operator chooses not to perform Action 3 or performs but cannot complete the action, the operator must perform both of the following actions:

- (4) Within 2 hours, secure each unborated water flow path to the RCS by use of at least one closed and de-activated automatic valve, closed manual valve, blind flange, or check valve with flow through the valves secured.
- (5) Within 4 hours and once per 12 hours thereafter, verify that the SDM is within limits.
- (6) A note to Action 5.b in TS Table 3.3-1 specifies that operations involving plant temperature changes may proceed provided that the calculated SDM accounts for the change.

3.4 Analysis and Evaluation

The NRC staff has reviewed the TS changes proposed above and prepared the following evaluation.

Action (1) above:

Action (1) requires the licensee to immediately suspend all operations involving positive reactivity changes. The licensee stated that this immediate suspension of all operations involving positive reactivity changes is needed because the loss of both channels of the extended range neutron flux monitor results in the potential for a reactivity change that could challenge the operators' ability to identify a loss of the required SDM. This action will restrict operations that could challenge the SDM including the suspension of sluicing and flushing operations of the chemical volume and control system cation bed or mixed bed demineralizers and is intended to avoid an inadvertent reactor power increase resulting from an addition of positive reactivity to the RCS.

Based on its review, the NRC staff agrees with the licensee and finds that the action is prudent and should immediately avoid an inadvertent addition of positive reactivity to the RCS while both channels of the extended range neutron flux instrumentation are inoperable. The proposed text for Action (1) is also consistent with Action B.1 for the LCO condition of when there are two inoperable trains in ISTS 3.3.9. Both proposed Action (1) and ISTS Action B.1 require that operations involving positive reactivity additions be suspended immediately. Since the proposed action of immediately suspending operations involving positive reactivity changes should avoid an inadvertent positive reactivity addition to the RCS, the NRC staff concludes that the proposed action is acceptable.

Actions (2) and (4) above:

Proposed Action (2) is to isolate the unborated water flow paths from the reactor makeup water system to the reactor coolant system within 15 minutes and proposed Action (4) is to secure each unborated water flow path to the RCS by use of at least one closed and deactivated automatic valve, closed manual valve, blind flange, or check valve with flow through the valves secured within 4 hours.

In Attachment 2 to the supplemental letter dated September 25, 2008, the licensee explained the above two actions. Action (2) to isolate the unborated water flow paths from the reactor makeup water system to the RCS is achieved by closing the following valves:

- Valve FCV-110B in the normal reactor makeup water (RMW) line to the charging pump suction,
- Valve FCV-111B in the RMW line to the top of the volume control tank,
- Valve CV-0201A, the chemical mixing isolation valve, and
- Valve CV-0221, an alternate emergency boration isolation valve.

Action (4) is to secure each unborated water flow path by at least one closed and deactivated automatic valve, closed manual valve, blind flange, or check valve with flow through the valves secured. The licensee explained that this method of securing must include the use of at least one isolation barrier that can not be affected by a single active failure.

Action (4) goes beyond just closing the four valves listed above and would include all unborated water flow paths to the RCS and would require securing the lines closed instead of only closing the lines. Action (2) would involve closing the valves for the only the major inputs of unborated water to the RCS, but not securing these valves. Therefore, there is the longer timeframe to conclude Action (4), then Action (2). Action (2) is completed within 15 minutes during the time period that the licensee is trying to restore at least channel of the instrumentation to operable status. If at least one channel of the instrumentation can not be restored to operable status within 1 hour, then Action (4) is to be completed within 2 hours.

The two actions are to mitigate the consequences of a boron dilution event by isolating the unborated flow paths from the RCS within the specified timeframe. During its review, the NRC staff asked the licensee to provide information demonstrating that the actions and the associated completion times in Actions 2 and 4 are adequate to mitigate the consequences of a boron dilution event. As documented in the supplemental letters dated September 25 and November 24, 2008, the licensee performed an analysis to show that no single failure or mispositioning of a boron dilution flow path would have the potential to cause the reactor core to reach criticality before all unborated water sources are secured in 2 hours.

The licensee considered all potential paths of unborated water sources to the RCS and found that the most limiting flow path, resulting in the highest deboration rate, is from the reactor makeup water system (RMWS) to the RCS, which is listed in the proposed Action 5.b as the path to isolate within 15 minutes. This path was identified as the limiting case and analyzed in UFSAR Section 15.4.6 for the boron dilution event. The current analysis in support of the TS changes assumes that the occurrence of the boron dilution event coincides with the loss of both channels of the extended range neutron flux instrumentation and that the operator would isolate this flow path within 15 minutes. The licensee's operating experience shows that 15 minutes allows adequate time to isolate the unborated flow path from the RMWS. The NRC staff found that the UFSAR Section 15.4.6 analysis also assumed a valve isolation time of 15 minutes and determined that the assumed valve isolation time is acceptable.

The analysis assumed that the unborated water from flow paths other than the RMWS path initiates coincidentally with the isolation of deboration from the RMWS path. The non-RMWS flow paths evaluated involve dilution to the volume control tank in the chemical volume and control system. The assumption of time to initiate the dilution from non-RMWS flow paths is consistent with the UFSAR Section 15.4.6 analysis (which assumed dilution of the RCS from only one flow path at one time) and is acceptable. The analysis assumed that the operator would isolate these flow paths within 2 hours of the loss of both channels of the required extended range neutron flux instrumentation. The licensee's operating experience shows that 2 hours is adequate time to isolate these flow paths.

The boron dilution event was performed with the boron mixing model, which was also used in the UFSAR Section 15.4.6 analysis. The analysis also assumed that (1) the RCS volume for each applicable mode is the same as that currently used in the UFSAR Section 15.4.6 analysis

and (2) the plant is at the minimum RCS boron concentration that satisfies the SDM for a given plant condition.

The results of the licensee's analysis show that within 2 hours following the initiation of the boron dilution event, the reactor remains subcritical, ensuring that no fuel failure occurs and no RCS pressure exceeds the RCS pressure boundary limits, and thus meeting the requirements of GDC 10 and 15 and the applicable acceptance criteria of NUREG-0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants" (the SRP), Section 15.4.6, "Inadvertent Decrease in Boron Concentration in the Reactor Coolant System," Revision 2, dated March 2007.

The NRC staff concludes that the licensee's analysis is acceptable for the following reasons:

- The licensee analyzed the boron dilution event using the same boron flow mixing model used in the UFSAR Section 15.4.6 analysis.
- The assumptions used in the analysis in terms of dilution of the RCS from one path and the RCS volume and initial boron concentration are consistent with those used in the UFSAR Section 15.4.6 analysis.
- The results of the boron dilution analysis for the limiting case meet the acceptance criteria of SRP Section 15.4.6 and ensure compliance with GDC 10 and 15 because the reactor protection systems have margin, with inoperable instrumentation channels, to assure acceptable fuel design and reactor coolant pressure boundary limits are not exceeded.

The NRC staff also finds that Actions (2) and (4) correctly include the operator actions and associated action CTs of 15 minutes and 2 hours that are assumed in the acceptable analysis. Therefore, the NRC staff concludes that Actions (2) and (4) are acceptable.

Action (3) above:

Proposed Action (3) is to restore at least one channel to operable status within 1 hour. This proposed action is what was in Action 5 before the changes due to Amendment Nos. 187 and 174; however, the AOT was 72 hours because it was for the LCO condition of only one channel inoperable of the two instrumentation channels. The proposed action for both of the two channels inoperable is one hour to restore at least one of the two channels to operable status. This AOT is the same 1-hour time specified for the same required action (Action B.2.1) of restoring one of the two inoperable channels to operable status in ISTS 3.3.9. This time is also consistent with other AOTs in the STP TSs for restoring at least one of two inoperable trains to operable status. Based on this, the NRC staff finds that the action and CT proposed in Action (3) are acceptable.

Action (5) above:

Proposed Action (5) is to verify that the required SDM is within limits within 4 hours and once per 12 hours thereafter. This action is a backup to Action (4) to confirm that no unintended boron dilution has occurred since the second extended range neutron flux instrumentation

channel became inoperable and that the required SDM has been maintained. The licensee stated, in Attachment 2 to its September 25, 2008, supplemental letter, that the time of 4 hours is sufficient to obtain and analyze a reactor coolant sample for its boron concentration to determine the SDM.

The NRC staff finds the proposed action completion time of 4 hours and action frequency of once per 12 hours acceptable because of the following:

- (1) The operator is required to isolate all unborated water sources by performing acceptable Actions (2) and (4) discussed above, and thus, the likelihood of the occurrence of an additional boron dilution event within the 4-hour period is very low,
- (2) The licensee stated that the time of 4 hours is sufficient to determine the SDM, and
- (3) The frequency (once every 12 hours thereafter) for the SDM verification is consistent with other actions to periodically verify the SDM in the STP TSs and the action frequency specified in Action B.2.2.2 in ISTS 3.3.9.

Action (6) above:

This action is the proposed note to Action 5.b that allows operations involving plant temperature changes as long as the calculated SDM accounts for the change. In its September 25, 2008, supplemental letter, the licensee stated that this note allows temperature changes to eliminate operational limitations on plant operation that could needlessly restrict cooldown or other plant evolutions.

This note, for two extended range neutron flux instrument channels inoperable) is similar to the note that was approved in Amendment Nos. 187 and 174 for one channel inoperable, but it is more restrictive. The note for one channel inoperable allows temperature changes or boron dilution provided the change is accounted for in the SDM. The proposed note for both of the two channels inoperable would allow only temperature changes and only if the change is accounted for in the SDM. Boron dilution is not allowed for two channels inoperable because there is no channel to measure the boron dilution. Also, this note is the same requirement stated in the note to Action B.1 in ISTS 3.3.9 for the LCO condition of two trains inoperable. Because the proposed note only allows temperature changes to be made if the change is accounted in the SDM, and the SDM must be kept within acceptable limits specified in the core operating limits report (COLR) to meet TS 3.1.1.1, "Shutdown Margin," any temperature changes allowed by this note will not cause the SDM limits in the COLR to be exceeded. Based on this, the NRC staff concludes that the note is acceptable.

3.5 Conclusions

Based on the above evaluation, the NRC staff concludes that the proposed (1) separation of existing Action 5 into Action 5.a (the current LCO action requirements for one extended neutron flux instrument channel inoperable) and Action 5.b (the proposed LCO action requirement for both extended neutron flux instrument channels inoperable) are acceptable and, therefore,

meets 10 CFR 50.36. Based on this conclusion, the NRC staff further concludes that the proposed amendment is acceptable.

4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Texas State official was notified of the proposed issuance of the amendment. The State official had no comments.

5.0 ENVIRONMENTAL CONSIDERATION

The amendments change a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The NRC staff has determined that the amendments involve no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendments involve no significant hazards consideration, and there has been no public comment on such finding published in the *Federal Register* on March 25, 2008 (73 FR 15788). Accordingly, the amendments meet the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendments.

6.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendments will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributors: Subinoy Mazumdar
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Date: January 28, 2009

E. Halpin

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A copy of our related Safety Evaluation is also enclosed. The Notice of Issuance will be included in the Commission's next biweekly *Federal Register* notice.

Sincerely,

/ra/

Jack N. Donohew, Senior Project Manager
Plant Licensing Branch IV
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-498 and 50-499

Enclosures:

1. Amendment No. 189 to NPF-76
2. Amendment No. 177 to NPF-80
3. Safety Evaluation

cc w/encls: See next page

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** See memo dated 12/09/08

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